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approach

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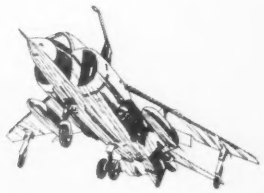
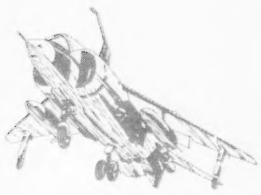
Several recent mishaps in the *Harrier* community have vividly demonstrated that the VSTOL business is being played with a whole new deck of cards. The benefits of vectored thrust have not come completely free, and those not well versed in the new aerodynamics of the AV-8A can be in for more trouble than they bargained for. ALL *Harrier* sticks had better pay attention to . . .





ALPHA, BETA, and THETA JAY

By LCDR John Leng, RN
Naval Safety Center

Three New Angles on Those Problem Greeks

FOR some 60 years, fixed-wing pilots have been working with stick, throttle, and rudder as the primary flight controls. Now modern technology has provided us with an addition to this list – namely the nozzle control for vectored thrust – a new control, a rewrite of rules, another ballgame. For the fighter types, this means a meaningful energy subtraction – as well as addition – capability. For the attack pilots, it means a unique and very effective defensive capability. The price paid for this extra capability is relatively small, but it does fall into the court of the pilot.

The unique characteristics of the *Harrier* are achieved in part by departing somewhat from "conventional" stability and control criteria in that small part of the envelope where lift is generated largely through the efforts of Rolls Royce, Ltd. How do we safely harness the potential of the aircraft? First, we identify the margins of stability and control. Secondly, we provide the aircraft with acceptable aids to alert the pilot to reduced margins, and finally, we train to appreciate the significance of both these factors. Training to appreciate the significance of those factors comes down in the final analysis to controlling three variables: the angle-of-attack – Alpha; sideslip – Beta; and the inclination of the thrust vector to the aircraft – Theta Jay. Treble trouble for the *unwary*. Let's examine these angles one at a time and see what they contribute to the overall picture.

Alpha (angle-of-attack) is defined as the angle between the free stream air and the chord of the wing. At subsonic airspeeds, the *Harrier's* small wing permits an angle-of-attack at approximately 15 units to be achieved without undue consequence. At 8 units AOA, the wing is working comfortably.

In order to design an aircraft that can transition back and forth from jetborne flight to wingborne flight without the stick doing a square tango in the cockpit, it is necessary to have a little instability in the longitudinal plane. For those not too inclined to the art of aerodynamics, this means that for each tad of back stick applied, there will be a pitching *acceleration* noseup, and vice versa for forward stick. This characteristic differs somewhat from our conventional flying brethren who develop pitch *rates* with their efforts on the stick. Now here's the rub: one small back stick application *does* require a larger correcting forward stick application to

check the acceleration. Get the idea? This characteristic is sometimes described as pitch instability, and I'm sure you're all familiar with it.

So what, you may say, the helo's been that way since Igor Sikorsky learned how to beat aerodynamics to death with his egg whisk. Right on, but the helo has a huge mass of groaning machinery to turn off the pilot who takes a hand full. The *Harrier* jock, on the other hand, can have the smoothest, quickest ride out of the envelope known to aviators. To help cut down on the control inputs, a pitch stab is fitted. This does a good job, but it doesn't change the aerodynamic shape of the airframe or do the flying for us. You could say it kind of smooths out the basic aircraft – so beware.

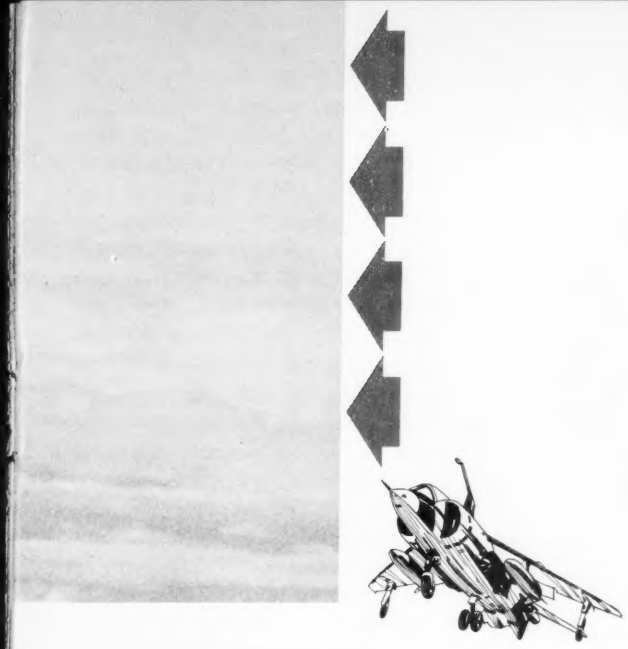
Now, back to business. Let's illustrate how this pitch instability could work out in reality during a high-performance short takeoff with big John Doe, ham extraordinaire at the controls, and the aircraft loaded on the aft c.g. limit. On with the power, down the runway, hit the nozzles with a large amount of back stick just to get it going. Bingo! Sixty degrees noseup and still pitching up. Let's repeat the process, but this time on the performance limits, say. After hitting the nozzle, apply a tad of back stick to get the aircraft rotating. As soon as she rotates, start easing the stick forward to *maintain* 12 units AOA. If the stick hits the forward stop, keep it there to control the AOA. Chances are you have overshot it and may still see 15 units or so. After the flight, then, I suggest you reread this paragraph.

So this is pitch instability. Now the question arises: what characteristics increase the pitch instability? Well, to name a few, they are aft c.g.'s, i.e., water in the tank, outboard wing stores, or even a more forward thrust center on the engine.

These characteristics affect the stability, but what about control? Well, by reducing airspeed, we naturally reduce the aerodynamic control available. Increased reaction control demands in the roll and yaw planes will reduce the available longitudinal control by a proportionate amount. So in summary, your most dangerous environment for pitch instability is an aft c.g.-loaded aircraft in a slow speed maneuver. OK, on to the other Greek, Beta.

Beta. To avoid sideslip and to keep the aircraft pointing into the wind, the manufacturer took great trouble to see that the fin was firmly fixed to the back end of the aircraft. However, up forward, two huge intakes are sucking in vast quantities of air which have the effect, in a slight sidewind, of turning the aircraft further out of wind. This phenomenon is known as "intake momentum drag," and its effect is related to the amount of air being consumed through the engine, which is decided by you, the pilot, with the throttle. Well, somewhere down the airspeed range, for each power setting, there comes an airspeed where the intake characteristic is greater than the restoring fin characteristics, and if the aircraft is disturbed in yaw, the aircraft will continue to diverge in that direction. This is "directional instability vs stability." In itself, this is no big thing if you like flying around like a ballet dancer. However, where life gets a little complicated is when, once disturbed in yaw, the wing starts working harder on one side than the other, and not unnaturally, a roll in the direction of the yaw soon starts to develop.

This "roll due to yaw" has very little aerodynamic damping because of the low airspeed in VSTOL flight, and, to all intents and purposes, is yet again an *acceleration* characteristic. The same control rules that applied for pitch instability now apply in the rolling



ABOUT THE AUTHOR. LCDR Leng entered the Royal Navy in November 1964, via the Britannia Royal Naval College at Dartmouth. He commenced RAF flight training in July 1965 and won his wings in 1966. Since that time he has served in numerous Royal Navy flying billets including F-4K *Phantom* carrier operations. His most significant experience, however, has been as a test pilot, spanning the 4-year period prior to his assignment to the Naval Safety Center in 1975 as the AV-8A and XFV-12A analyst. Test pilot experience includes over one year at the Naval Test Pilot School/Test Center at Patuxent River and, more recently, nearly 3 years at the A&AEE Boscomb Down Test Center in England where, in 1973, he was appointed senior naval fixed-wing test pilot. In this latter capacity, he performed numerous test and evaluation flights in all models of the *Harrier*.

plane. In other words, the sooner you catch the roll, the less lateral stick you will need. Let it ride too far and you will not have enough roll authority. What a way to find out that your wind vane isn't centered! Under all conditions of flight with a symmetrically loaded aircraft, a centered windvane will result in a centered stick. So the roll problem tends to come down to the problem of keeping the windvane in the center. We've gone one better than that now; we do it automatically with the yaw autostabilizer system backed up with rudder pedal shakers – as a warning device – and HUD sideforce symbology as well as the windvane. However, how much authority do those aids have, and from where do they derive their information? The yaw stab doesn't take its information from the sideslip vane, that's for sure. It derives its information from a gyro located in the aircraft which measures sideways translation or sideforce, similar in operation to a device we've used for years called a "sideslip bubble." This sideforce is proportioned to sideslip, but does *not* equal sideslip. The carriage of an asymmetric store loading will result in erroneous information to the HUD and RPS systems, as well as to the yaw autostabilizer system. So much for the significant Beta characteristics.

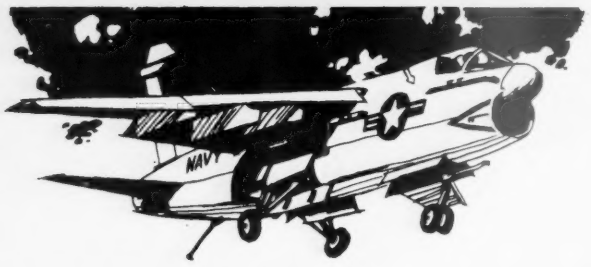
Theta Jay (the thrust vector) is defined as the angle between the thrust vector and airframe longitudinal axis. The direction is controlled by the pilot with the nozzle lever; the magnitude with the throttle. Increase the angle, and the stability margins decrease. This means that for each trim airspeed, further deflection of nozzle will require a slightly more forward stick position. Decrease the nozzle angle, and the nose will drop. From this brief discussion, it should be apparent that nozzle trim changes directly affect the angle-of-attack. To sum up, decreasing nozzle angle will increase the airspeed, decrease the lift, and cause the nose to go down. As the airspeed rapidly increases, the lift lost through nozzle deflection will be quickly gained by the wing, and you're back in business. Due caution is required, however. Rapid movement of the nozzle lever, just like the stick, may require more pilot compensation than your experience level can cope with.

From the previous discussion, it should be apparent that the aircraft can tolerate a lot of Alpha, assuming the Beta is under control and vice versa. As *Harrier* pilots, we spend quite a great deal of time trading off one for the other while simultaneously being aware of our control margins. By and large, many of the VSTOL limitations are based on the amount of control required to correct adverse conditions of both Alpha and Beta, and it is up to us as VSTOL pilots to be able to appreciate the tradeoffs and the significance of these and other factors which may affect the stability and control characteristics of the aircraft.

There is no simple black and white answer to these limits; an increase in the requirement for roll control caused, shall we say, by an asymmetric loading, reduces the controllability of pitch and yaw for moderate angles of α and β. The rules are simple enough. At 8 units AOA and zero sideslip, everything is on your side. Change these values and what you will gain on the "swings," you will lose on the "roundabouts." *(Translation: What you gain in one area, you lose in the other. – Ed.)*

Above all, remember that a departure from the desired flight condition will almost inevitably be an accelerating one, so the sooner the correction, the smaller the control input has to be. Conversely, the later the correction, the larger the required control input. The discipline required to control this bird is high, but the rewards are immense. "Nozzle away." ◄

AIR BREAKS



Speak No Evil. A C-117D was scheduled for a logistics flight with a planned 1000 takeoff time. About 0815 the aircraft was towed out of the hangar. The plane captain, qualified to taxi, obtained the winds (060/30-35) and started engines, intending to taxi to the tower.

As he began to taxi, the tail lifted off the ground. The plane captain stopped into the wind, set the power at idle, lowered flaps, and directed another crewman, in the copilot's seat, to get out and remove the elevator battens.

The crewman completed the task, but upon returning to the aircraft, disaster struck. The cargo door hinge assembly was torn from the side of the aircraft by a strong gust of wind, catching the crewman between the cabin door and the fuselage, crushing his jaw. The plane captain cut the engines and helped his buddy to the hangar for medical attention.

A series of events had taken place which caused the injury and the damage. If any one of them had not happened, there would probably not have been a story. For example, the battens should have been removed during preflight with one crewmember stationed in the cockpit at the controls; the cabin door should not have been opened with the No. 1 engine turning; and, after the gust of wind raised the tail, the plane captain should have shut down and either been towed or awaited a pilot. Supervisory personnel should not have permitted the plane captain to try to taxi because of the strong, gusty winds.

The command pointed out that the incident could have been prevented by compliance with existing directives.

Fuel Pit Problems. *Part I.* A CH-46 was taxied into the fuel pits to hot refuel prior to launching on a local instrument flight. An internal fuel tank was installed and the pilots planned to use the extra fuel for additional training.

Fueling proceeded normally until the internal tank was filled. The crew chief inside the bird signaled to shut off the flow, but the fuel pit attendant didn't understand the signal. The fuel kept on coming, drenching the crew chief, flowing into the interior of the helicopter. What happened?

The crew chief removed the tank's gravity fuel cap to visually check the fuel level, thus bypassing the internal overflow valve. He forgot to position the internal selector switch to OFF when the overflow began.

The squadron ASO briefed all hands on the incident and its causes. SOP has been reiterated and all crewmen have been subjected to a practice refuel.

Part II. A P-3 was taxied to the fuel pits and refueled to 28,000 pounds. The refueling panel gages (under wing) and the cockpit fuel quantity gages agreed within 100-200 pounds. Delays in the pit are discouraged, and since there were other *Orions* waiting, the fuel tanks weren't dipped.

The PPC taxied out and launched. After returning from the flight, the aircraft was taxied through the rinse rack and proceeded toward the fuel pits in low RPM. Enroute, the APU flamed out, the No. 2 engine surged to normal RPM and then flamed out, and the No. 2 fuel boost pump illuminated.

The No. 2 fuel tank quantity gage read 2600 pounds and the other gages agreed. The aircraft was taxied to the line. Troubleshooters discovered the actual fuel quantity was only 100 pounds, even though calibration and recalibration had been conducted. A zero calibration of this magnitude couldn't go

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undetected if crewmen had followed proper preflight procedures.

A review of the aircraft's history disclosed no previous fuel quantity discrepancies. Before the flight, the flight engineer failed to use the hydrostatic tester to determine his fuel load, even after discovering the tank wasn't full enough to dip. He planned to dip tanks after refueling, but didn't because four other *Orions* were waiting.

This incident reemphasizes the absolute necessity for following published procedures. Failure to follow the procedures can be disastrous. Haste, complacency, and shortcuts cannot be tolerated.

Who Needs Gages? LT Gregory W. Hinchliffe, USN, was the PPC of a P-3B tooling around VMC one night on a training flight. Within the space of a millisecond, here's what happened:

- Both HSIs froze – including compass card, bearing pointer, course bar, and DME.
- Both BDHIs froze.
- Both VORs failed and off flags appeared.
- Pilot's MM-4 with AHRS selected, tumbled.

The PPC selected the standby gyro to reacquire reliable attitude information. He made a 180 toward Homeplate, broadcast his plight, and received radar advisories. Inflight troubleshooting was attempted, but proved futile.

Then LT Hinchliffe resorted to that age-old, tried and proven scientific method of tapping an inoperative gage. Voila! All gages and instruments returned to normal.

After landing and returning to his line, all attempts failed to duplicate the fiasco. Troubleshooters worked for 5 hours trying to duplicate the condition with APU and aircraft power. No luck. The only discrepancy noted was some missing spacers used in mounting the forward navigation J-box. Someone theorized that perhaps a voltage interruption occurred, causing one or more relays to deenergize and when the voltage returned, some contacts may have stuck in the deenergized position.

Substitute a night approach to minimums, instead of this VFR flight, and there would have been an instantaneous pegged pucker factor. *Whatever it was, it bears telling.* Have any of you P-3 folks ever had anything like this happen?

Same Old *$&†*! Story. A C-118 T2P was flying the leg from Point A to Point B and it was his turn to shoot an approach and land. He was vectored and cleared for a back course, localizer approach.

Prior to low station and while in the clag, the TPC gages showed they were turning the wrong way to intercept the localizer. So the TPC took the controls from the copilot and turned to intercept the localizer while cross-checking the copilot gages in the turn.

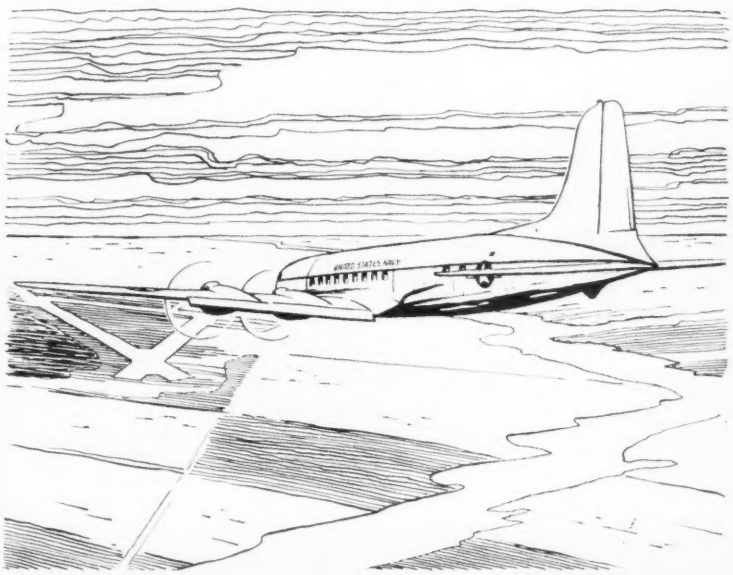
Then the TPC discovered that the copilot had been turning correctly and the TPC's gages were still on the TACAN station which the crew had been using for low station. The VORTAC station is located at low station on the approach.

The TPC turned back, proceeded to the low station inbound, and called for the gear and the checklist. The copilot heard the request, but didn't react because he was watching the instruments.

They broke out of the clouds 3 miles on final with good visibility. The TPC turned over the aircraft to the copilot to land. As the flare for landing was begun, the warning horn sounded, and all kinds of red lights flashed. Wisely, the TPC two-blocked the throttles – the gear was still up. They waved off, dropped the gear, and landed on the next pass.

The squadron remarked that the incident was precipitated by the classic chain of events; i.e., broken habit patterns, cockpit confusion, and the lack of cockpit communications.

When will we ever learn?



FIRST IMPRESSIONS ARE LASTING

By LT Holden W. Hewlett
Safety Officer, VA-85

DURING the check-in process of most aviation squadrons, the nugget and seasoned aviator alike receive training and indoctrination preparing him or standardizing his methods to conform to his new unit's operations.

Now some squadrons may give him the old "let's say hello to the new guy" routine and leave all the trivia to the "sit down and read the book" method. Of course, they'll want to schedule him for tomorrow's daybreak launch because "he can hack it." Or can he? Sure, he's been NATOPS qualified in the RAG, but is the book going to ensure that he realizes that the torn G-suit, that modified helmet, and that dirty mask are really not ready for flight? By the same token, is all the information about flying (NATOPS, SOP, CATTC Manual, TACNOTES, CVA/CVS NATOPS, etc.) in the pubs? It's probably there. All he has to do is read it and he's ready, right? Wrong!

The "new guy" needs a lot more than an over-the-shoulder toss of the manuals. First impressions are lasting. You want him to act like a professional, you have to treat him professionally. How?

- You discuss squadron procedures with him in general and in specifics.
- You determine his aviation experience and background.
- You show him the kneeboard cards you think are important for him to have.
- You review the SOP Guide and issue him one.
- You check his flight equipment to determine its condition and standardization and take a moment to explain what you advertise in your squadron as properly outfitted for safety and survival.
- You discuss any ejections or accidents he may have been involved in . . . a learning experience for you both.
- You check his currency for ejection trainer, high altitude chamber, and swimming currency (maybe it doesn't jibe with the training records).
- You discuss the hazards he'll be encountering in both operations from the beach and aboard ship. Keep him aware . . . where else will he learn it? You learned by hard knocks, but does he have to?
- Ensure he knows what's expected of him with respect to flying while:
  Fatigued/sick
  Inadequately briefed
  Completing the flight (yellow sheets).

So now you are treating him like a professional. And guess what? You have given him a fine impression of the SIERRA HOTEL outfit you've been promoting. He's not apt to be sloppy about his flying habits and, of course, now he's prepared. He's ready to perform like a professional! ◄

Lessons Learned

BY LT C. F. Wise
Ass't. Safety Officer
TRARON TWENTY-SIX

THERE are several old adages or sayings floating around naval aviation such as "Learn from your mistakes," "Experience is the best teacher," etc., all of which paraphrase the concept of "Lessons Learned." The concept is not new; in fact, it is as old as logical thinking and good headwork.

We in naval aviation all profess to adhere to the lessons learned concept as a good idea and cling to it as a method of preventing recurring accidents and incidents. We all recognize the great strides and vast improvements in Naval Aviation safety during recent years. We have accomplished much in lowering the accident rate since establishment of the Naval Safety Center. Our command, a basic jet training squadron, is presently riding the crest of almost 2 years and 50,000 hours plus of accident-free flying; yet, we still have recurring incidents. We are still faced, as is all naval aviation, with the same mistakes being repeated.

As a recent safety summary stated, "Only the BUNOs change," and I might add, usually the names and faces as well. The newness of an incident wears off, a new group of aviators and/or students moves in, and the potential for making the same old errors returns to the same level. As an example, here in VT-26, approximately 13 months ago, an SNA (student naval aviator) very nearly bought the farm when he took off with a grossly asymmetrically loaded T-2. He was rushing through his preflight to make an FCLP "Charlie" time and failed to notice one of his

tiptanks was full of fuel while the other was empty.

After this incident, we took what we thought were adequate steps to prevent this from ever happening again. The incident was reported via message, briefed at AOMs and maintenance meetings, and *written* into flight support lectures for both students and instructors under training. Adequate time for briefing and preflighting all syllabus flights was guaranteed. We felt we had performed our job – from the Safety Department standpoint – and proceeded with the daily routine.

Lo and behold, much to our consternation, this same set of circumstances repeated itself just recently (13 months after the first incident) and once again could have caused a serious aircraft mishap. The situation was almost identical: An SNA who was a member of a multiplane flight was "rushing a little bit" through his preflight and missed the differentially loaded tiptanks. When questioned after being safely on the deck, he could not recall the position of the tiptank sight gage in question or whether he could visually see any fuel through the sight gage. He did, however, remember the previous (first) incident being discussed in his safety flight support lectures, but that was a couple of months ago and it was not fresh on his mind.

A survey of all students assigned to this command revealed that approximately half of them remembered the tiptank incident being discussed in their flight support lectures. So, it appeared that just lecturing and verbally cautioning each class of students was not sufficient. About this time the idea of expanding the "lessons learned" into a written notebook which would be thoroughly distributed as required reading for all students was developed. The Operations and Safety Departments worked together to compile inputs from NAVSAFECEN computer printouts, our own squadron reported incidents, previous accidents in the T-2 community, and a survey of both students and instructors about "goofs" and other "DSs" which had occurred. The concentration was intentionally heaviest on student procedural and headwork errors since this notebook was directed towards them. Such items as unauthorized maneuvers at low altitude, inadvertent secure of both engines airborne, landing on wrong runways, landing in the underrun, formation break in echelon, etc., are included in this notebook, and it is anticipated they will have a lasting impression on anyone who reads them – instructor or student.

Thus far, the "lessons learned" notebook has been well received and has generated a lot of comment in the readyroom and student learning center. We feel this idea will help in supporting our existing safety education in preventing the needless repetition and "reinventing of the wheel" that we too frequently encounter in aviation safety. The concept would also apply and be useful to squadrons outside the Training Command as well. RAG squadrons, whose function is training, might also benefit from a "lesson learned" notebook or other form of presentation to aviators who are learning their new aircraft and its operating peculiarities and refinements.

A former CO used to relate the story of how he piled up an A-7 in the RAG while trying to land and stop on a wet runway. After the accident, several remarks were made to the effect that, "Oh, yes, we thought everyone knew about the A-7 on a wet runway." Apparently, the word was not being promulgated adequately in that particular case either. We can learn from other people's previous errors only if we are made aware of them and can successfully retain and utilize that knowledge through a cautious, wary approach towards similar potential problem areas.

Our boss in the Training Command, RADM McDonald, summed it all up in an aviation safety message when he stated, "Each year we seek to prevent mistakes by educating our people of past mistakes . . . The most tried and proven method of avoiding accidents is through the application of proper procedures and the lessons learned in the Book of Experience." I feel that the concept of a "lessons learned" notebook will assist in furthering safety awareness and accident prevention education. Isn't *that* the name of the game? ◄

During a recent safety and readiness review standdown, the CO of VA-215, CDR Riley Mixson, led off the discussion with words that could bear repeating each time a squadron is preparing for carrier operations after a home-based turnaround period. This article summarizes the skipper's remarks.

LT Sergei M. Kowalchik
ASO, VA-215

Think Shipboard Air Ops

AS I view it, safety topside (pilot wise) is a function of:

- Competent stick
- Knowledge of procedures
- Headwork

This particularly applies in the demanding environment of shipboard operations. We have all proven that we are competent sticks during various demanding flight endeavors performed throughout the training cycle thus far. There are, however, varying degrees of competency right here in this room, and it is up to each one of us to know our own limitations and not exceed them.

Knowledge of procedures means not only knowing those NATOPS emergency procedures, but very definitely means that you know and understand CVA NATOPS and CATCC doctrine. We will have kneeboard cards with various IFF emergency squawks and NORDO signals day/night. During the emergency, however, is not the time to be fumbling through your kneeboard cards. Know all these procedures cold.

Headwork is realizing your limitations and not placing yourself in a compromising situation, either those generated externally or internally. A carrier pass is a thinking pass from the break or pushover at Marshal.

As any squadron prepares for the ship, you will notice marked changes in some very important indexes. The confusion index will be way up because the squadron schedule is tied directly to the ship schedule, which is traditionally flexible, but especially so when requalifying the deck. Our schedule will be subject to change on a minute's notice, so get your rest and be prepared.

The happiness index will also be up because we're going to participate in a very challenging and rewarding endeavor. A naval aviator is happiest when he is flying around the ship, as we all can attest, and anyone who doesn't feel that way should look for a different line of work. It's important to note that when either the happiness index or the confusion index is up – the safety index is down. Now is the time to get your mind right by continually thinking shipboard air ops.

The carrier landing pass is the ultimate in aviation. This has been medically proven by tests conducted in SEASIA where naval aviators' excitement factor was higher during catapult and landing operations than during the heat of combat. Carrier work requires the highest degree of concentration and precise flying from the 180-degree position, or pushover, all the way to touchdown. Think ship on each FCLP pass.

You're going to hear a lot about boarding rates soon, and this emphasis will continue all through the workups and upcoming deployment. Let me say right now that I would much rather see a bolter from a conscientious "ball" flyer than a "taxi one wire." If you really "hawk" that ball and respond to it correctly at all times, then you're going to bolter maybe 2 percent of the time and get aboard in good shape the other 98 percent.

In summary, carrier work requires skill, preparation, and headwork. It has been eloquently stated before, on numerous occasions, that no matter how good you look on target, or how many times you out-hassle the fighters coming back to the ship, you can blow it all if you look sloppy at homeplate. So keep your hand on the stick, your head on your shoulders – thinking, and coordinate the two!

YOUR SIGNAL IS BINGO!

By LCDR K. E. Hughes
Safety Officer
VA-176

THERE comes a time in the career of every carrier aviator when, for one reason or another, landing on the ship becomes either impossible or inadvisable. The factors that cause this situation vary from weather, to lack of pilot proficiency, to aircraft malfunctions. Whatever the initial problem, the flightcrew confronted with a bingo situation experiences new problems that often overshadow the original.

Predeployment CQ and workups conducted within 150 miles of NAS Stateside utilize the bingo field to maximum advantage. During this critical period in the training cycle, transition from shorebased to carrier operations is being made. Thus, it is imperative that this alternative to "coming aboard" be provided. The primary divert field is often the homefield for part of the air wing and a "home away from home" for the others. The numerous bingos experienced in workups, coupled with pilot familiarity with the field, tend to classify this evolution as routine and a chance for a "beer on the beach." It becomes commonplace in the minds of many.

In contrast, consider the deployed carrier (the Med environment is used in this example). Suitable divert fields are limited, and operational commitments often take the ship beyond usable range. Thus, a "no bingo" situation may be dictated early in the deployment. Aircrews and CV Air Ops alike, however, *can* adapt to this radical change in bingo policy through increased proficiency in the tanking pattern and judicious scheduling (including cancellation of operations when the situation warrants).

But the deployed CVA more often than not is within range of a divert field. It is in this environment that operations are maintained at a high rate, especially in these days of limited underway time when each hour must be fully utilized in order to realize maximum readiness. Thus, the probability of a divert increases. Unfortunately, the deployed divert field does not resemble NAS Stateside. Communications with controllers, taken for granted in CONUS, can become strained and confused. Mountainous terrain in the vicinity of the airport is characteristic throughout the Mediterranean basin. Directional runway lighting, lack of suitable arresting gear, and nonavailability of a GCA approach further complicate the picture. Also, the diverting aircrew may have never seen the destination airfield before, making early acquisition of the runway difficult.

Thus the stage is set for potential disaster. An aircrew lulled into complacency by the routinely observed predeployment bingo may well be ill-prepared to enter the environment described above. Their attention is usually focused on another problem, such as a low fuel state or a control malfunction, and little initial consideration is given to the facilities involved. Thus, many accidents have been the direct result of the bingo, and *not* the event that brought about the divert requirement. The deployed bingo evolution must be realized for what it is – an *emergency*. If you don't believe this, consider the two examples mentioned on the adjacent page.

Now that the problem has been aired, what constructive action can be taken to alleviate it?

(1) At the squadron level, Operations/Training must

ensure that aircrews are thoroughly familiar with divert fields and anticipated problems peculiar to each. At the commencement of the cruise, a divert brief by personnel experienced with the area involved is a must. This should be followed up at the end of lengthy port visits with a rebrief on the divert fields available during the next at-sea period. Finally, every flight brief (as required by NATOPS) must include divert field information. Aerial photographs and large briefing cards similar to enlarged approach plates (constructed by Operations prior to deployment) are most useful briefing aids.

(2) At the CAG/CVA Air Operations level, the scheduling of practice approaches at divert fields, when the operating schedule permits, can provide an aircrew firsthand experience with the bingo field before the *in extremis* situation dictates its use. "Rainmaker" missions should be utilized to continually update divert information, and should include the CVA pilots' own observations (including shooting a practice approach when possible) and problems encountered.

(3) "Hawking" and tanking procedure for low state aircraft must be soundly determined, widely promulgated, and continually practiced. Highly proficient implementation of a viable Tanking TACNOTE can markedly reduce the required bingos. Also, emphasis on "tanking for real" must be introduced in the CONUS workups prior to deployment.

(4) Once an actual bingo has been initiated, an escort aircraft should be assigned to facilitate communications and field acquisition. An aircraft with two radios (such as the KA-6D) is most useful in this situation, as it can handle divert communications while remaining in contact with the ship. (An aircraft with both a UHF and VHF radio capability would be ideal in the Med/European operating area.) Ship-to-shore communications and radio relay must be expeditiously executed to facilitate the bingo.

Aboard a deployed carrier, "your signal is bingo" requires a concerted effort by the CVA/Air Wing Team if the evolution is to be handled in the professional manner characteristic of naval aviation. Remember, a bingo is an emergency all of its own. ◄

Added Emphasis

(from NAVSAFECEN files)

• An RA-5C made a night divert to an overseas shore base following four bolters due to overcontrolling the nose in close. The RA-5C was unable to lock on shore base TACAN. A KA-3B learned of his difficulties and attempted a rendezvous but was unsuccessful due to cloud cover. The RA-5C was unable to contact the divert tower at ETA and declared an emergency. The KA-3B, orbiting in the vicinity of the divert field, tried UHF/DF cuts on Guard and other frequencies. The RA-5C was given a heading which was verified by another airborne aircraft. A descent was commenced on heading with 2200 pounds fuel on totalizer. The pilot was unable to identify runway lights or the field. The *Vigilante* made a low pass over an island town and climbed to 5000 feet where the engines flamed out on level off. The pilot and RAN ejected and were later rescued.

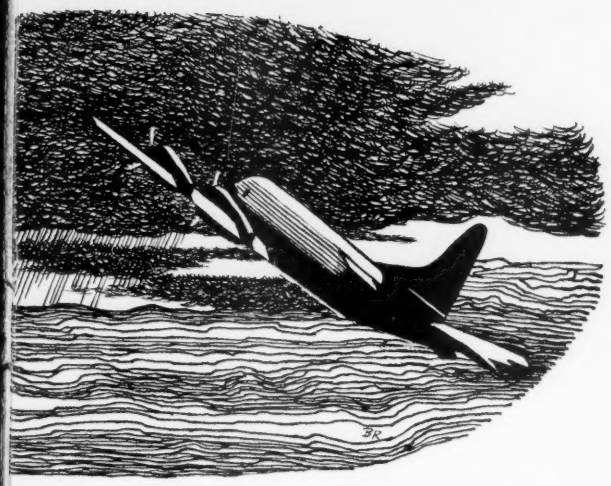
Investigation revealed that the pilot had joined the squadron one month after deploying, thus missing the predeployment training cycle with associated controlled weather and good divert fields. Material failure of navaids was a definite cause factor in this accident, but both pilot and RAN failed to keep DR plot, check other TACAN stations, cross-check standby compass, or commence descent prior to ETA.

• Two F-4J aircraft were diverted at night due to arresting gear problems on the ship. Neither aircraft could receive the divert field's TACAN or communicate with the tower. All field lights were out. One pilot finally located the field and landed on an unlit runway. The runway lights were turned on as he completed his rollout. The other aircraft spotted the runway but was about 10 miles away. He flamed out before he could land. The crew successfully ejected.

Investigation revealed that the divert field had shut down at sunset. One of the F-4 pilots had checked with the tower at the field and got a weather report about one and one-half hours prior to being diverted, but nothing was said about the field being used as a divert field that night. A message from the CVA was not relayed to the divert field. Numerous attempts were made to confirm the status of the field for use as a bingo field for night operations, but there was a communication breakdown and the field was never notified.

A WW by Any Other Name

By LT Paul J. Derocher, Jr.
VP-31



THE plan sounded good. The P-3 *Orion* would proceed from NAS Midwest to NAS Seacoast with an hour and a half stop enroute at Midwest AFB. There would be plenty of time on deck to pick up some squadronmates, check the weather, and file a flight plan for the second leg of the flight.

The first leg of the flight went well. The *Orion* cruised swiftly and smoothly over the jet routes in VFR conditions. The good weather continued all the way to Midwest AFB. Upon arrival, the P-3 was secured and the crew disembarked.

Shortly after landing, however, the weather began to deteriorate. The plane commander learned from the base weather forecaster that a squall line of moderate severity was about to pass over the field. Additionally, a second squall line would follow the first about an hour later.

The second squall line sounded particularly bad. Severe thunderstorms were predicted, with surface winds gusting to 65 knots and hail 1½ inches in diameter. The current MWWA (Military Weather Warning Advisory) indicated that most of the state was in Condition Red. By definition, Condition Red weather included tornadoes, usually accompanied by severe thunderstorms, high winds, and large hail. No WW was briefed to the flightcrew.

Unfortunately, the P-3 could not be safely secured for the predicted weather. No hangar space was available, and there were no tiedown padeyes on the ramp. Thus, the aircraft faced the risk of damage if it remained at Midwest AFB.

Since there was a predicted clearing between the passage of the two squall lines, the plane commander elected to depart Midwest AFB before the arrival of the second squall line. Selecting a route based on forecaster's recommendation, the aircraft took off for NAS Seacoast.

The aircraft's radar was utilized to avoid thunderstorm cells, and weather guidance was requested from the air traffic controller's radar. Receiving negative reports from both Center and the aircraft's radar operator, the P-3 penetrated a layer of clouds at FL240. Turbulence, initially light, quickly became severe. Hail, approximately 2 inches in diameter, impacted the aircraft, causing the front windshield, a panel of tempered glass, and vinyl ply nearly 1¼ inches thick, to begin cracking. Following NATOPS procedures, the aircraft descended to 10,000 feet. After checking for damage, the plane commander determined that the aircraft was controllable and the flight continued to NAS Seacoast.

Postflight inspection revealed extensive damage to the nose radome, windshield, wing leading edges, fairings, searchlight, and pylons.

Later, it was determined that a WW had been in effect in close proximity to the P-3's route of flight. However,

the USAF forecaster had not briefed the WW to the plane commander, nor included it on the weather briefing form. Had the plane commander known of the WW, would he have departed Midwest AFB? Would you?

The lack of information concerning the existence of the WW may have been significant. Nevertheless, USAF forecasters are not required to brief WWs. The weather briefing itself had been valid, and accurately depicted the location and severity of the weather. The only item missing was the labeling of the weather as a WW. How then can the naval aviator determine the existence of severe weather along his route of flight when at a USAF base?

The answer lies in checking the weather areas

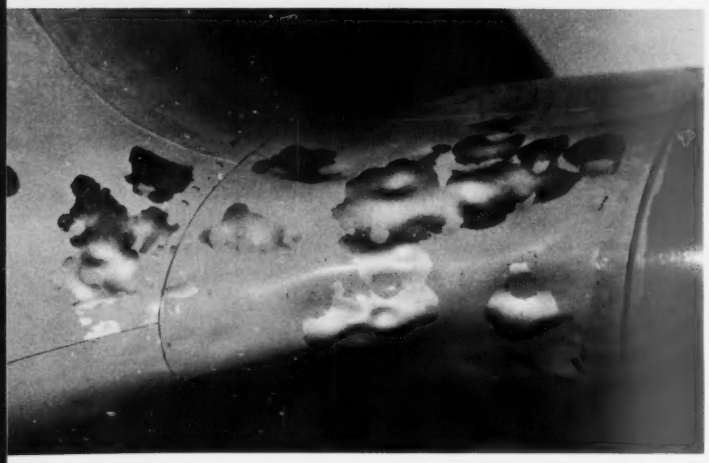
depicted on the MWWA and comparing the predicted weather against the *criteria* for a WW. The National Weather Service issues a WW whenever a tornado or severe thunderstorm is expected. The severe thunderstorm is further defined by surface winds 50 knots or greater and/or hail three-fourths of an inch in diameter or larger.

Military Weather Warning Advisories are issued by the USAF Global Weather Service. The MWWA divides the Continental United States into specific areas, determined by weather type. Two of these areas indicate severe weather. The Red area forecasts tornadoes, and may include (but need not) severe thunderstorms. The Blue area forecasts severe thunderstorms, which are defined as having surface winds 50 knots or greater and hail three-fourths of an inch or larger.

The criteria for the establishment of a Red area or a Blue area appears at first to be the same as that used to establish a WW. However, an inspection of the MWWA areas Red and Blue versus valid WWs will show that sometimes no WW is in effect at all. When a WW is issued, it is typically much smaller than the Red or Blue area on the MWWA. Therefore, the MWWA Red and Blue areas cannot be equated to a WW. The apparent discrepancy is the result of the periodic scheduling and long duration of the MWWA as opposed to the WW. MWWAs are issued every 6 hours, whereas the WW is typically based on weather data only an hour old. Additionally, the WW covers a smaller area for shorter duration than the MWWA. The WW, therefore, has a higher probability of severe weather actually occurring.

Analysis of the MWWA and the many other weather products available at USAF weather briefing facilities should enable the pilot to determine the feasibility of penetrating MWWA Red or Blue areas.

OPNAVINST 3710.7G specifically defines the action to be taken by naval aviators concerning WWs. While we are certainly compelled to follow the letter of the law, we should abide by the spirit behind it as well. Severe weather is just as severe, whether or not it is known to be a WW. We cannot let a label be a substitute for thinking. ◄



Proposed Changes to OPNAVINST 3710.7G.

COMPATWINGSPAC has recommended to CNO that General NATOPS (OPNAVINST 3710.7G) be changed as follows:

Recommend change last para, section 325(b), pg. 3-5, to read as follows:

> "Flights shall be planned to circumvent areas of forecast atmospheric icing and thunderstorm conditions whenever practicable. When feasible, flights shall be planned at sufficient altitudes to permit positive radar control. Air traffic control radar is not a primary weather radar, but when combined with other sources of information, can be helpful in circumnavigating areas of thunderstorm activity."

Recommend change section 325(c), pg. 3-6 and 3-7 as follows:

> Starting at line 12, change to read: "potential of the existing air masses. These advisories will be given to all pilots filing from U.S. Air Force bases and are used for weather briefings in lieu of National Weather Service information. A military weather warning advisory with potential tornadoes (condition Red) or severe thunderstorms (condition Blue) shall carry the same flight filing restrictions as a WW. Valid WW and MWWA . . . "

Eliminate the following sentence: "Air Force advisories do not constitute . . . "

Page 3-6, right-hand column, line 2, change to read: " . . . aviation severe weather watch bulletin (WW) or for which a military weather warning advisory Red and/or Blue is in effect unless one of the following exceptions apply:"

Change note at end of section 325 to read: "It is not the intent to restrict flights within areas encompassed by or adjacent to a WW or MWWA Red or Blue area unless storms have actually developed as forecast."

ON THE BEACH

DURING an early morning midshipman indoctrination flight in a T-34B, ENS Kevin C. Harris, the pilot, noted problems. The engine RPM began fluctuating, and the oil pressure dropped to near zero. An emergency was declared and for good reason; a complete power loss occurred within seconds.

ENS Harris elected to land the aircraft on the public beach at Padre Island (near NAS Corpus Christi). Before he could land, however, an engine oil fire broke out. Smoke billowed from the engine and oil splattered the windscreen, completely obscuring forward visibility (see photo).

Approaching high key, the landing gear was cranked down using the emergency system. An uneventful, no-flap landing followed.

Margin for error during this compound emergency was minimal. ENS Harris, however, maintained his composure and executed proper emergency procedures with true professionalism. ENS Harris is a SERGRAD and, in light of his total pilot experience of 307 hours, his actions are noteworthy, indeed.

This incident is being used by ENS Harris' command to stress the importance of thorough procedural knowledge and preparedness for any emergency.

Good show!

SOME months ago, two pilots with about 2000 hours each launched in their SH-3 for a helicopter site at the 6000-foot level in the mountains. Their mission was to pick up troops and equipment and take them to another site.

The flight to the mountainous helo pad was uneventful and, assisted by 20/25-knot winds and a smoke grenade to indicate direction, a routine landing was made.

They boarded five passengers and three cargo containers, a total of 1500 pounds more than their landing weight. In a hover, they pulled 80 percent torque, N_g was 95 percent, and N_r was 100 percent. Meanwhile, the winds decreased to about 5 knots and became variable.

As the HAC began to move off the pad, both engines went to topping power, and N_r slowed to 90 percent. Trouble! There was only one place to go and that was down. Fortunately, the terrain from the pad sloped down sharply, so they followed the terrain, unable to do anything else. The crewman grabbed the mike and told the pilots that the tailwheel was dragging along the rugged terrain. The pilot fought to keep the helicopter reasonably level, expecting to crash any second. The copilot felt that a nosedown attitude might help, took control, and made the correction.

While descending, the rotor blades began zapping the tops of the brush, very neatly severing everything in their way. At a point where there was some semblance of a level spot, forward movement was finally stopped and the pilot effected a light-on-the-wheels hover. Quickly the crewman was told to offload the cargo and the troops. When the 1500 pounds had been removed, a low profile climb became possible and was executed. Despite a trip of 40 miles over rugged terrain, and a heavy 1-to-1 vibration, the pilots flew to a refuge base,

MOUNTA

landed, and inspected the damage. *(Why he didn't shut down to inspect damage, rather than traveling 40 miles with heavy vibrations, is a total mystery. –Ed.)*

They found all main rotor tip caps dented and torn, including damage to the blade pockets. All of the tail rotor blade tip caps were likewise dented and torn. The lower UHF antenna mount bracket was smashed. The tailwheel tire sidewall was torn, and the main landing gear fitting was bent. Later, engines were removed and inspected for possible FOD.

In retrospect, the power available was sufficient to hover in ground effect, but obviously nowhere near enough to fly. When they lost the ground cushion, they were unable to transition to forward flight. The pilot failed to use proper technique. *(That's an understatement! – Ed.)*

Apparently, the only planning that had gone into the flight was a dry run a week before. The conditions of this near disaster were identical to those of the last dozen high-altitude/mountainous area fiascoes that have occurred to Navy and Marine pilots the past few years. Several articles on high-altitude helo operations have appeared in Safety Center publications since both of these pilots finished flight training, and the NATOPS manuals have all sorts of goodies to assist a pilot if he'd only read and heed.

Let's review the basics. For openers, we'll repeat the mountain flying truism: Meteorological conditions – wind, weather, and turbulence – are constantly changing. You might have 25 knots of wind one minute and the next minute they're calm.

The old head, wise to nature's whims in the mountains, expects the worst, allows plenty of extra margin, and is happy if conditions aren't as bad as he anticipated. Winds at higher elevations are seldom calm for long. They're usually strong, gusty, and shifting. If safe flight depended on a full 25-knot wind, maybe the operation should have been reviewed and a lighter load taken on.

Flying helicopters in mountainous areas is treacherous and calls for special pilot techniques. Most Navy helo accidents in mountainous areas are caused solely by poor pilot technique – as was this incident – resulting from the pilot's general lack of knowledge, planning, or experience in this phase of flying.

The keys to safe flying in mountains are: *knowledge, planning, concentration, training, and experience.*

NATOPS manuals contain multiple illustrations, schematics, diagrams, power charts, and recommended techniques to successfully counter mountain wave actions, wind flow patterns, and nonpreferred approach paths. There are admonitions to maintain airspeed. There are cautions about getting behind the power curve. Perhaps the most important section is on power available versus power required, HIGE/HOGE information, and density altitude determinations.

Read again the paragraph above about the old head. You use all available information and make all determinations on the conservative side. It's far better to know you can land or hover at 8500 feet DA, and then find out your DA is only 6000 feet, than the opposite.

If after all your careful planning there's still some doubt, make two trips with lighter loads rather than one near max gross. Any pilot can learn enough, ahead of time, to enable him to fly successfully in mountainous areas with a high degree of safety. ◄

By LTJG Kim A. King
VA-215

HOW STRONGLY DO YOU FEEL ABOUT LIFE?

Your survival gear and SAR preparation will probably tell.

LTJG Gordon "Howdy" Doody is escorted to the SAR helo, which in turn takes him to the High Sierras to spend the night as a "survivor." He is wearing a summer flight suit.

The SAR helo airlifts the "survivor" into a preselected meadow at 8000 to 8500 feet.

LTJG Doody finds a spot clear of snow and inspects and inventories his gear soon after arriving in the mountains.

Scenario: LTJG Gordon Doody, VA-215, is sitting in the cockpit ready to move. His thoughts go like this . . .

"WELL, it's just about time to taxi out. Everything checks out okay. I'll just wait for the plane captain to give me the signal, and then it's off to do a little DCM . . .

"Wait a minute! What's going on here? The skipper is heading out this way with that SERE-type LCDR. I wonder what they want. Maybe he wants to tape some jet engine sounds for that film the squadron just did . . .

"Now why in the hell do they want me to shut down? I haven't done anything wrong. Or have I? Hope the old man didn't see me clowning around in the cockpit a minute ago. Well, I guess I'll soon find out . . . "

The CO, CDR R. D. Mixson, speaks . . .

"Congratulations! You have just ejected over the Sierras. All you have with you is your chute, seat pan, and present flight gear. This is LCDR Dick Ritz. You will follow his orders. Good luck!"

And a few last words from LTJG Doody . . .

"Great pork! This can't be true!

"We're not really going to the mountains, are we?"

With that brief exchange, VA-215 SAREX 1-75 began. The exercise scenario, developed by LT Sergei Kowalchik, the VA-215 safety officer, and LCDR Gary Ostrander, VA-215 operations officer, was based largely on the element of surprise. First, a date for the exercise was chosen. Then a time slot was picked on the daily flight schedule. Ironically, the schedules officer, LTJG Gordon "Howdy" Doody unknowingly wrote himself into the slot chosen. He was allowed to man and start his aircraft – thinking all the while that he was going on a DCM hop. We've already told you what actually happened.

Behind three of the four observers is their shelter. (Left to right) LT Dave Kelly, MSC, LCDR Dick Ritz, and Mr. George Banky.

At this point, LTJG Doody was taken to the NAS Lemoore SAR helo which was waiting to take him and four observers to a preselected site in the High Sierras. Unfortunately, weather conditions precluded inserting anyone on that day, so the entire operation was postponed until the day following. This negated some of the shock factor but did not help LTJG Doody much because his flight gear was impounded. This gave him no chance to procure extra food and clothing.

The refusal to allow the chosen pilot "survivor" to add extra clothing to his gear tied in directly with the major reason for the exercise – a desire to illustrate the need for pilots to wear adequate protective clothing when flying in a winter environment.

Prior to the start of the exercise, *Barn Owl* pilots had been briefed to wear long underwear and winter flight suits whenever they were scheduled to fly over the Sierras. As is usually the case, some of the pilots were content to be more comfortable in the cockpit in their summer flight suits. Of course, cockpit comfort is nice

The "survivor" puts the finishing touches on his shelter, built between two fallen trees. The observers termed it "excellent."

Temperatures dropped to 24-26 degrees during the night, but LTJG Doody, in the Sierra suit, was warm and slept.

to have, but it certainly was small comfort to LTJG Doody on the following day when he and the four observers were airlifted to a meadow at the 8000 to 8500-foot level in the High Sierras. With a temperature ranging in the low 30s, with 4 to 5 inches of snow on the ground, LTJG Doody's summer flight suit was essentially valueless. He was allowed to don waffle weave long underwear, but even this did not help very much.

On reaching the meadow, LTJG Doody was left to his own devices while the observers constructed their shelter. Although somewhat confused initially about where to start and what to do, LTJG Doody soon began a logical survival sequence.

First, he selected a spot relatively clear of snow and took stock of his gear. In addition to his survival vest and LPA, he was given a parachute, a liferaft, and the contents of a seat pan. After completing his equipment inventory, he searched for a site for his shelter. He selected a "V" formed by the trunks of two large, fallen trees. The shelter he constructed was excellent and as comfortable as possible under the circumstances. By the time he finished his shelter, the sun had set, and the temperature had begun to drop.

During the early evening, he continued to prepare the inside of his shelter. Despite his relatively light clothing, he was able to stay relatively warm by keeping busy.

At approximately 2045, jet aircraft were heard overhead. Using a PRC-90 radio, preset to an exercise frequency, he made contact with what proved to be two VA-215 A-7Bs returning from a night mission. For the next hour, he conducted a mini-SAR exercise. He practiced vectoring the aircraft to his position and also tested his night signaling devices. Upon completion of this, both he and the observers prepared for sleep.

Meanwhile, the temperature was falling to the mid-20s. This temperature drop and LTJG Doody's extreme discomfort presented an excellent opportunity to test a mountain survival suit known as the Bugaboo Mountaineering Sierra Kit. At 2200 the observers gave him a kit.

The suit, made of synthetic fabric and goosedown, consists of a jacket with hood, gloves, trousers, and body bag. Added attractions from a Navy/survival point of view are its bright orange color and its size when packed. The entire outfit can be hand-packed into two cylindrical bags approximately 8 inches long and 4 inches in diameter. When the suit is vacuum-packed, the size can be cut in half.

This Sierra kit enabled LTJG Doody to pass the night very comfortably even without a sleeping bag. The observers, outfitted in long underwear, summer flight suits, standard issue winter survival suits, headgear, and gloves, were quite uncomfortable during the early morning hours even with sleeping bags.

The exercise ended the following afternoon when the NAS Lemoore SAR helo "rescued" LTJG Doody and the observers. Before the exercise ended, however, there were several opportunities for further training – which included conducting SAR support exercises with VA-215 aircraft during both day and night conditions and testing night location aids.

The exercise brought to light many pointers and hints for the individual pilot who might find himself in a winter mountain survival situation. Most of these are SOP. Many are not followed. Any one of them could mean the difference between life and death – your death.

You can barely see LTJG Doody bundled up inside his shelter.

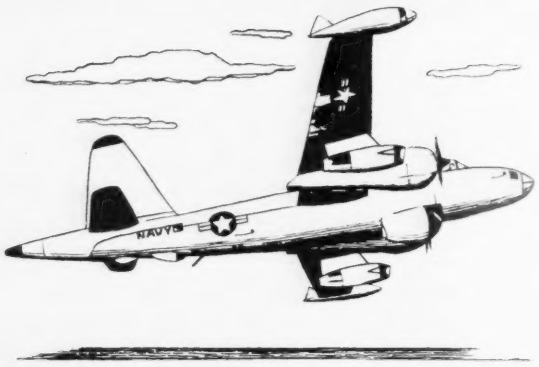
LTJG Doody spent a comfortable night in his shelter, thanks to the Sierra survival suit he was wearing.

Sierra Kit

The Sierra kit has already been the subject of an initial investigation by NAVAIRDEVCEN (Naval Air Development Center). VA-127 brought it to their attention several years ago when the squadron was given approval by COMNAVAIRPAC to utilize the Sierra kit in the LR-1 equipment container stowed in the RSSK-8A. COMNAVAIRPAC requested the NAVAIRDEVCEN to evaluate the Sierra Kit for possible inclusion in the Navy survival equipment inventory for special use. The NAVAIRDEVCEN procured some kits and expects to complete the evaluation by June 1976.

- First, and most important, follow the Boy Scouts' motto and "Be Prepared." Wear proper clothing when conditions dictate it. In a winter situation, consider taking along an extra pair of heavy socks, a good pair of winter (waterproof) gloves, and some kind of ski cap or watch cap.
- Don't count on being rescued the day you eject. Many factors – chief among them the weather – can prevent this. Consider carrying extra food such as beef jerky or candy.
- If you do find yourself in a winter mountain survival situation, be logical. If you have time, inventory your gear, but keep in mind that your primary and immediate objective is a decent shelter. All other things can come later.
- Don't exhaust yourself. Working at high altitudes is different from working at low levels, so conserve your energy by pacing yourself.
- Remember that a fire can be one of your most important assets. It can provide warmth as well as become an excellent night visual pinpoint. VA-215 SAREX pilots reported that they could see LTJG Doody's fire long before they came within radio contact range.
- Lastly, be cool. Most aviators consider themselves Sierra Hotel gents in the air and about town. Maintain that attitude in a survival situation, and you will be miles ahead.

The choice of whether or not to consider these basic elements of survival is the pilot's. But keep in mind LTJG Doody's words when questioned about the value of adequate protective clothing: "How strongly do you feel about life?"



Remember When SOP Was Law?

By LCDR H. K. Barnhill
VP-31

ONCE in a while I overhear a readyroom comment about NATOPS which is far from complimentary. Fortunately, in this day and age of professional aviation, those people who doubt or don't understand the worth of NATOPS are few. It wasn't so long ago, in the early sixties, that the NATOPS program was not so universally accepted.

Many "old salts" were quite reluctant to shelve the squadron standard operation procedures which each unit developed individually and independently. The introduction of NATOPS was also occasionally hampered by a negative interpretation of its purpose. Inscribed on the readyroom chalkboard in the Fall of 1961 appeared, "NATOPS is a tool; a hammer is a tool; therefore, NATOPS is a hammer." Unfortunately, some believed this and used NATOPS as a battering ram instead of a means of instruction and standardization.

NATOPS has matured, been solidly established, and been recognized as a major factor in the reduction of the Navy aircraft accident rate. For the occasional "doubting Thomas" and neophyte, I recall a true, november sierra sea story to emphasize why I believe in NATOPS.

The Wounding of an Eagle

Anonymous

"TIME heals all wounds," goes the old adage when it pertains to the physical body. A wound to one's ego is a longstanding thing when administered to a pilot by a fellow pilot. However, a wound to one's own ego, when inflicted by one's own hand, is a crushing humiliation that takes years to banish from the mind.

Case in point: As a very young and inexperienced pilot, I was scheduled to fly as wingman in a two-plane section of AD-6 *Skyraiders.* I was thoroughly briefed by my intrepid leader as to my responsibilities as a wingman ("Hang in there at any price."). My call sign was "Blue – Two" and my leader's call sign was "Blue – One." Our squadron aircraft were parked adjacent to another AD-6 squadron. My aircraft was parked nearest the outbound taxiway. I hurriedly preflighted my aircraft, jumped in, and started the engine with only one quiet backfire. I eagerly waited for my leader to check in on tactical so that we could get on with what was to be a brilliant display of aerial dexterity on my part. Naturally, I was anxious to prove myself a most capable wingman, for a bad follower does not a good leader make.

After waiting many minutes, I observed two aircraft taxiing from left to right, on their way to the runway. I gave each of them a thumbs-up in turn (all pilots do that to other pilots). Shortly thereafter, "Blue – One" taxied into view from the left and, for some unexplained reason, stopped and waived me on. I immediately grasped the implication of this expansive gesture and realized that I was going to have the golden opportunity of *leading* the flight. With a hurried thumbs-up, I added power to my aircraft and led my leader out to the runup area, short of the runway. I performed my mag check, ran through my takeoff checklist, and casually looked up with the expectation of seeing a thumbs-up, ready-to-go signal from "Blue – One." Instead, "Blue – One," without a single glance in my direction, taxied right across my front and took the *centerline* of the runway.

Totally chagrined at this quick reversal of events from leader to follower, and unwilling to question my leader's sound judgment (perhaps I had taxied "crooked"), I immediately positioned myself on his right wing. Without a cursory glance, hand signal, or what-the-hell, he added 59½ inches of manifold pressure and breezed it down the runway. Needless to say, I two-blocked it right now, narrowly averting an unheard of torque roll while

In the Fall of 1960, the P-2V *Neptune* RAG squadron, like all squadrons, had a SOP by which all their instructors abided and passed on to the student pilots in training. Part of the cockpit checks in the P-2 included a check of the fuel panel located in the overhead between the pilot and copilot. It was a fairly simple procedure to memorize and execute the fuel panel check, even though reaching the panel was somewhat awkward. As a moderately intelligent ensign, I concluded my training in the RAG on schedule and moved on to my first squadron.

Two weeks after checking in, I was climbing up the ladder in the nose wheelwell for the beginning of my third FAM flight. My instructor was a seasoned LCDR with over 4000 hours. The flight started normally. I completed the fuel panel check using the procedures outlined in my new squadron's SOP, and we proceeded to the approach end. After being cleared for takeoff, we took the duty and lined up. I advanced the throttles on the 3350s and my instructor in the copilot seat moved the J-34s up to 99 percent. The plane accelerated rapidly and lifted easily off the runway into the crisp morning air.

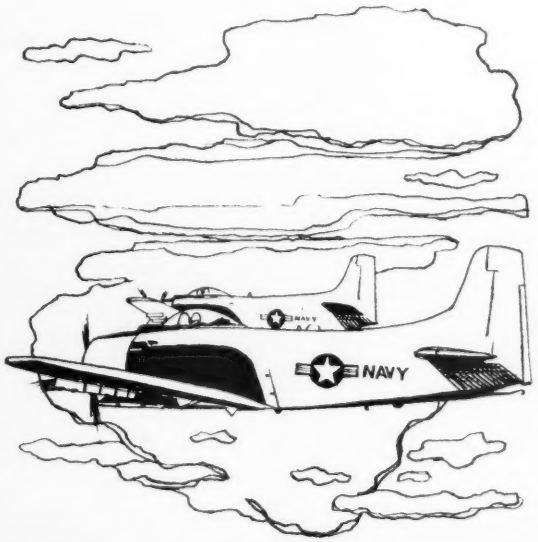
Fifty feet off the deck, the P-2 yawed to the left, then to the right and settled a bit. Before we could analyze anything about the jets, both recips began popping. All I could do was lower the nose to maintain airspeed and sink toward the cold waters of San Francisco Bay.

Our saviour? The ADJ3 plane captain sitting in the jump seat spied the fuel tank selector switches pointing toward the empty center tanks and promptly selected main tanks. The recips caught about 20 feet off the water. We climbed, turned downwind, and made a full stop landing for my shortest FAM flight on record.

Complacency and what else? The instructor, the plane captain, and I *all* missed the improper fuel tank selection not once, but twice; first during the fuel panel check, and then again later in the checklist. How did I mess up the fuel panel check? Easy!!! I merely began the panel check using my new squadron's SOP and midway through reverted to the RAG squadron's SOP which was more deeply seated in my memory. The result was inadvertently leaving the nearly empty center tanks selected.

I BELIEVE IN NATOPS! ◄

standing still. I managed to catch up to him after a short distance, still waiting for a glance of approval or disapproval at my dexterity in "hanging in there." He finally got airborne and once again pulled that "fool the wingman" trick by not giving me the gear-up signal.



Finally, after commencing a right-hand, climbing turn, he looked in my direction. The look I received from my leader I am unable to adequately describe. Inasmuch as I was tucked into a very close wing position, I gathered that the frantic "push-away" motion with his hand meant for me to loosen up the formation. I obediently and smoothly moved away from his aircraft to a distance of 6 feet. He continued these frantic motions for quite some time until I had moved away to about 20 feet directly abeam. At this time, I was alerted to the fact that my leader was fearlessly attempting to rendezvous with the two-plane section of ADs that had previously taken off.

This maneuver caused me great concern, simply because I had not been briefed on a section-to-section rendezvous. Upon completion of the rendezvous, I once again received frantic push-away hand signals from my leader, so obediently I "loosened" up again. At this time, I astutely observed that the leader of the newly formed division was also mimicking my leader's frantic motion with his hand. In consternation, I finally switched to tactical frequency and broke radio silence by asking "Blue – One, what's up?" "Blue – One" then answered, "I've been having problems getting my bird started. I'll be taxiing out in a few minutes. Meet you over the field at Angels Five." ◄

Eliminating the Wife Error

By Jackie Starmer

EVERY Navy wife knows that keeping her everlovin' happy and content is her primary duty in life, and . . . that any additional duties thrust upon her, such as bearer of babies, pumper of bicycle tires, and dispenser of meals, medicines, and money are strictly her own puddle of mud, and fer gawd sakes don't splatter Hisself with family problems, particularly before he hits the blue. And if this were fact instead of wishful fancy, all aviation safety officers could retire to Peru and raise wart hogs.

Since it has long been the contention of aviation safety officers that preoccupation with family problems oftentimes causes upset aviators to bend or even bust their birds, which in turn causes everyone from the Commander to the guard at the gate to get in a royal snit, it is obvious that something has to be done to eliminate the chain reaction resulting in "pilot error," or if you prefer the more honest term, "wife error."

And since it is impractical to abolish existing Navy marriages, and wives will innocently or otherwise continue to muddle up Hisself's mental state before, during, and after missions, it is suggested that a mandatory indoctrination course be held for the wives of all flying personnel, briefing them on the hazards of homelife, with particular stress placed on the importance of *Twelve Hours Twixt Fight and Flight.* Naturally, this course should be taught by a highly-qualified instructor – someone with years of intimate knowledge and experience in creating these hazards . . . me, f'r instance.

Having been a veteran Navy bride for 17 years, I have been thoroughly orientated, indoctrinated, inoculated, and regulated in all things military . . . I wear white gloves through receiving lines; I demand crew rest after birthings; I medicate my family with the standard Navy prescription of APCs and orange juice for every ailment from vertigo to obese ear lobes; I have never driven a *Follow-Me* jeep into a parked aircraft; and above all, I keep a calling card tray near the front door – where it seldom collects anything but cigarette butts, beer can pop-tops, and balls of rug fuzz. The important thing is, it's there.

It seems that in spite of this excellent Navy training and background, as a perfect wife, I ain't much. I found this out, thanks to the snide remarks of an aviation safety bohunk whom I shall bite in the neck at the first opportunity. Now, I'm actually aware that Hisself should go beanless before a mission, but how was I to know that rutabagas are lethal? There's not one word in the aviation safety manual concerning rutabagas! It seems that rutabagas cause Hisself's gastric juices to over-gast something fierce, particularly when he's shooting landings, and the high cholesterol content riles up his fatty tissues to a fare-thee-well, also particularly when these two evil forces collide in or around the old gump's pituitary, well . . . all hell breaks loose. And because of this slipshod oversight by safety manual writers, one airplane is AOCP for a year, the runway is undergoing extensive repairs, and a mangled S-2 tire now reposes in my living room as a plastic-covered hassock.

Aside from being responsible for the home menu hazards, there's no doubt that we wives are held accountable for the daily problems of marital bliss that mayhaps miff an aviator to the point of being a potential wingbuster. Contrary to popular opinion, Hisself does not become a snarling beast only when his flaps won't flap, or his rudder won't rudd, or he wasn't promoted when he by-gawd shoulda' been . . . no, these routine problems don't put our "sky kings" into an accident-prone mental state.

Actually, it's the little things that cause Hisself to come unglued . . . which is why a wife should always check the flight schedule before she indulges in an indignant account of why she turned the hose on the commanding officer's wife this morning and just who does she think she is anyway! And, say, did I mention that Junior stuffed a prune up his nose and don'cha know that he won't get that scuba diving scholarship since no one can scube with a maimed nostril and that the bank should oughta hire bookkeepers who can add because we can't possibly be overdrawn *that* much.

And many a wife has been the cause of a feathered engine, or at the very least, a kinked relief tube, because of her unguarded reactions to Hisself's blue funks, which usually develop in every normal husband at two critical periods of the day – breakfast and dinner. Although the dinner hour at our house has all the serene atmosphere

of the Dempsey-Firpo fight ("git yer elbows off the table; don't eat so fast; clean yer plate; this kid will be eating with his fingers when he's 35 years old; git the cat off yer lap . . . "). I would say that of the two, the breakfast hour is the more critical period.

This is when, if we wives are to be instrumental in keeping the accident rate down, we must repress the overpowering urge to clout our roommates with their safety boots when the predawn conversation consists of "and what cooking secret do you use to make these eggs taste like Ben Hur's old sandals?" . . . and/or "my, my, dear – you look about as sexy as a stopped-up sink in that flannel pup tent." Husbandly remarks such as these are usually the signal to square off and have at it. But to ensure a tranquil premission mental state in your sky-jock, remember to say absolutely nothing. Indignant rage and revenge can be subtly expressed in other ways . . . possibly you can jam all the zippers on his flight suit or go retch on the seat of his Rover.

It goes without saying that family problems occurring during an extended cruise have caused more than one airplane driver to come nose-to-nose with an unexpected object – like a mountain.

This is a period in his life when he must be spared all worries other than "will he win at bingo tonight?" and "how soon can he get an R&R to Waikiki?"

Naturally, a long cruise is a bucket of worms to the wives left sitting on their hassocks, and unless Hisself pacifies the little woman with more letters than a once-a-week note (usually as romantic as the P. O. D. and as short as commissary hours), she will discard all efforts at morale-building and manage to let him know that simply because he's 3000 miles away, he needn't think that kids, mumps, fights, and bills don't exist, fer heaven sakes, and a pox on your mental state and what about mine!

Although many a cruise widow is blessed with a husband who, though he reads fairly well, doesn't write, and has often wished that her roving roommate was as prompt and eloquent in writing love notes as he is in filing his per diem voucher, it is suggested that she refrain from penning any epistle to her absentee aviator that might possibly result in violent chain reactions. Since crippled aircraft beget Commanders' snits; snitted Commanders beget the nervous dizzies in pilots; the nervous dizzies is what begot Hisself into the cottonpickin' mess in the first place, and all on account of I wrote him the following letter:

Dear Pen Pal:

Will answer your note of 3 weeks ago before I get dressed for work. Oh, yes, I've taken a job to occupy my time while you're away . . . the pay isn't much, but ZOWIE!! is it interesting! I'm a BOQ Housemother, 8 p.m. to midnight shift.

By the way, did I tell you that our dog is at the vet's? No, he isn't sick; he's under quarantine. He bit that Shore Patrol Honcho – the same sorehead who gave me a speeding ticket and suspended my driver's license last week when I accidentally ran through a stop sign during the change of command in front of the Admin Building and plowed into a black car sporting a monogrammed flag the size of a bedsheet. No serious injuries, except to one fella . . . he looked sorta like the Admiral, but it was hard to tell with all that dirt on him. Come to think of it, it just might've been. Oh well, whoever he is, he sure has a temper!

I won't bore you with the rest of the details – except to say that the damage to our car was slight. Four hundred dollars will fix it up as good as new . . . which reminds me, the last check I wrote seems to have bounced, and I guess that's the reason your name was put on some kind of list.

In closing, let me reassure you that everything is under control here at home and no need for you to worry. Fly safe and keep in touch, pal.

Your everlovin' wife

P.S. . . . Whaddya know! It was the Admiral!

Like I say, something has to be done to eliminate the "wife errors" resulting in accidents. And it is to the everlasting credit of one particular aviation safety officer that he tried to do his part in preserving the accident-free record of his outfit. However, because of his own devotion to duty in attempting to erase "wife errors," the poor bohunk was medically discharged with unusual injuries . . . neck bites.

Adapted from *MATS Flyer*

If you haven't seen your wife smile at a traffic cop,
you haven't seen her smile her prettiest.
Kin Hubbard

P-POOR PREFLIGHT

A SAR bird, an HH-46A, was scheduled for a local training flight, and two H2Ps were assigned to fly it. The two pilots had already begun their preflight when Ops slightly changed the mission to take a passenger. For this reason, one H2P was replaced by a HAC.

The HAC signed the yellow sheet and proceeded to the aircraft. Upon arrival, he asked the copilot if the preflight had been completed. The answer was yes. However, the two H2Ps had split their preflight duties. The one who was removed from the flight took the exterior and had not completed his preflight when the HAC strolled out.

The aircraft started and departed. The crew flew for an hour and a half, performing basic airwork with the exception of a landing to let off their passenger. Upon return to Homeplate, the damage shown in the photographs was discovered.

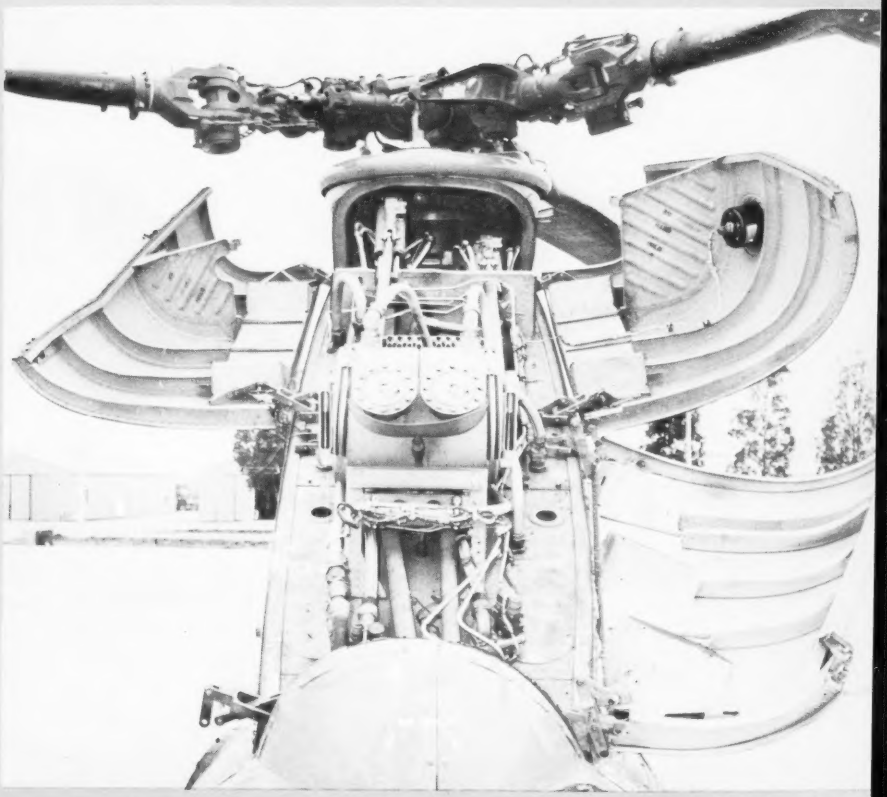
The damage consisted of the loss of the aft, lower, right-hand clam shell assembly; both hinge assemblies damaged beyond repair; popped rivets; and bent and torn skin on the aft, lower, left-hand clam shell assembly.

Obviously, the HAC must take the major share of the blame for the needless damage. His aircraft was not ready to fly, and his violation of NATOPS was apparent. His copilot and crew chief weren't very helpful either, by not giving him the full story.

Local procedures call for UP aircraft to have the upper access doors open for the pilot's inspection, and to be secured by the pilot during his preflight. A big warning went unnoticed by the careless HAC when he failed to properly preflight and see that the safety straps were secured.

It is hard to understand, particularly with helicopters, why any pilot would jump in and go without a complete and thorough preflight. Even when everything has been carefully buttoned up, it is easy, with all the helo's shakes and rattles, for hatches, windows, doors, and various other assemblies to vibrate loose.

No flight is so important that a preflight can be cursorily done. To assume that the preflight has been completed by someone else is similarly risky. Naval aviation is unforgiving of carelessness and any pilot who is careless can expect to pay a price – including, possibly, loss of life. It isn't worth it! As Jack Benny used to say, "Now, cut that out!" ◄



Crash Crew Safety Team

By LTJG J. D. Quint, USN
VP-46

A SQUADRON's safety record is the direct result of professional performance by all hands. What we sometimes forget, though, is that there are others not directly involved with the squadron who have a direct and very immediate impact on squadron safety. One example of these "others" is the airfield crash crew.

Crash crews receive extensive training, and the men are true professionals in every sense of the word. Unfortunately, for them, and us – from a crash and salvage standpoint – the aviation community's inventory of aircraft is vast and highly complex. Therefore, they cannot be expected to possess an in-depth knowledge of aircraft other than those that use their field frequently. One of the ways to help alleviate this problem is to mount an information program that reaches beyond the squadron.

The squadron safety department is the obvious base from which to start. Patrol Squadron FORTY-SIX, homeported at NAS Moffett Field, and presently deployed to MCAS Iwakuni, Japan, has organized a Safety Team whose purpose is to acquaint WestPac airfield crash crews with the P-3 *Orion* aircraft. The team is comprised of the Assistant Safety Officer, and a Safety Petty Officer from each shop.

The Safety Team's first demonstration was held at Yokota AB, Japan. During a 2-day period, the Air Force crash-rescue crew received a lecture series and training sessions, pointing out the emergency systems in the P-3.

The training culminated in a series of staged emergencies where the crash crew had an opportunity to actually work with the aircraft. Approximately 20 members of the crash-rescue crew took part in the demonstrations.

"The training was really in-depth . . . much more than we had expected," said Master Sergeant William A. Moore, Deputy Fire Chief. "We all learned a lot. Thanks to the Navy team's training, there's no doubt in my mind that we would have a successful rescue should the need arise."

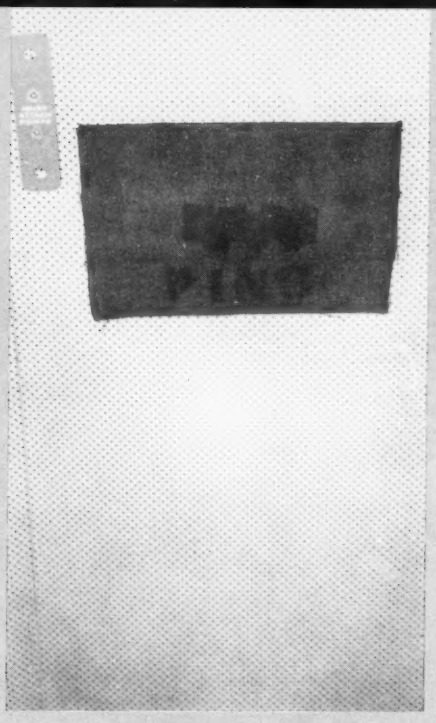
The VP-46 Safety Team will be more than happy to provide instruction to any airfield's crash crew who requests it. The team currently has invitations to Misawa AB, Japan; Osan, Korea; and MCAS Iwakuni, Japan. Safety will benefit from these exchanges. In fact, the entire P-3 community benefits. VP-46 would like to visit all of the airfields in WestPac to ensure familiarity with their aircraft. The more that a crash crew knows about the aircraft, the more you can be sure that when that unlooked-for inflight emergency arrives and you are finally on the deck, you will be met with fast, safe, knowledgeable, professional assistance. ◄

GEAR PIN HOLDERS

Contributed by
VP-30
Det Pax River

THE recent NATOPS change which added *Gear Pins* to the P-3 before-start checklist lays the responsibility on crewmen to ensure that gear pins have been removed. Stowage location of the landing gear pins onboard the P-3 aircraft has generally been left to the discretion of the flight engineer or other crewmembers who pull the pins during preflight. Pilots boarding the aircraft following walkaround preflight may find the gear pins tied to the lifevest rack, placed in the cockpit, stored under a dinette seat, tucked away in the galley drawer, or in any number of other imaginative locations.

In order to standardize stowage and preclude the usual hunt-for-the-pins, Patrol Squadron THIRTY personnel have designed a gear pin holder. Made locally in the PR Shop, the holder measures 8½ by 5½ inches. Three pieces of 2-inch red webbing (P/N 31136 Class 3) are sewn together to form a block. One-inch black elastic webbing (P/N 66507 Class 1) is sewn in the middle, forming three loops. The word "PINS" is stenciled in one-inch letters on the bottom. Two-inch Velcro tape is used to fasten the block to the aircraft. The holder is strategically located on the starboard fuselage directly in view upon entering the main cabin door. Any crewmember entering the aircraft has a clear, unobstructed view of the holder and the pins.



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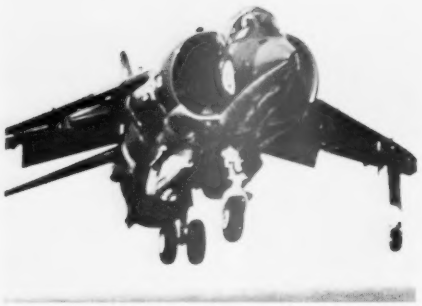

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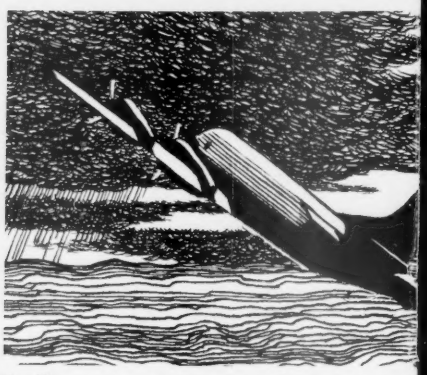

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CNO "Readiness Through Safety" Award
Fleet Marine Force Pacific

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- **HC-6
- **VS-24
- VF-84/VF-101
- VA-83
- VA-35
- RVAH-5
- VP-44
- VAW-123
- HS-11
- VC-2

CGFMFPAC
- **VMAT-102
- HMH-462
- VMA-223
- HMA-169
- VMFA-232

COMNAVAIRESFOR
- **HS-74 (NAS South Weymouth)
- VR-52 (NAS Willow Grove)
- VA-203 (NAS Jacksonville)
- VS-72 (NAS Norfolk)
- VP-91 (NAS Moffett)
- VF-201 (NAS Dallas)

COMNAVAIRPAC
- *VAQ-133
- VF-111
- VA-97
- VA-165
- VS-21
- VAW-115
- VP-46
- HS-2
- VF-121
- HC-1
- VQ-1

CGFMFLANT
- VMA-311
- HMA-269
- VMCJ-2
- H&MS-31

CNATRA
- *VT-26
- VT-27
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Do you violate NATOPS or altitude minimums?

Do you fly without an oxygen mask when one is required?

ARE YOU A PROFESSIONAL NAVAL AVIATOR?

Do you navigate without reference to charts or instruments?

Do you exceed your limitations?